CONDITIONAL PETITION FOR EXTENSION OF TIME

If any extension of time for this response is required, applicant requests that this be considered a petition therefore. Please charge the required Petition fee to Deposit Account No. 03-1240.

ADDITIONAL FEE

Please charge any insufficiency of fees, or credit any excess to our Deposit Account No. 03-1240.

REMARKS

Favorable reconsideration of this application as presented herein is respectfully requested. Claims 1-4 remain pending in the application.

In the Office Action dated Dec. 3, 2003 ("Office Action"), the pending claims 2-4 of the current application were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. The applicants would like to comment to the rejections as follows. Contrary to the statement in para. 2 of the Office Action, claim 2 does not include the phrase "the UV processing and the heat trimming processing are carried out an arbitrary times and in an arbitrary sequence." This claim limitation is present in claims 3 and 4, which are amended to overcome this rejection as discussed below. Claim 2 is not amended and remains in this application in its previously amended form.

In claim 3, the objected to phrase "an arbitrary times and in a arbitrary sequence" is amended to clarify the claimed subject matter of the invention. The uniform ultraviolet irradiation and the uniform heat trimming processing are alternately performed at optional times as optical property adjusting processing. In connection with rejection of claim 4 in para. 4 of the Office Action, the applicant has amended claim 4 to indicate that one of either the transmitted light or reflected light (in addition to the reference light) is monitored, as described on page 10, lines 20-25 of the specification. Accordingly, it is respectfully argued that amended claims 1-4 satisfy the requirement of 35 U.S.C. § 112, second paragraph.

In the Office Action, the claims 1-4 were also rejected under 35 U.S.C. § 103, as being unpatentable over Shima et al. (US 5,949,934) in view of Tsuda (US 6,289,154B1), Nishiki et al. (US 6,456,762B1) and Starudobov (US 6,222,973B1). *See* Office Action, pages 3-7. The applicant respectfully traverses this rejection and argues that the current invention, as recited in the amended claims 1-4, is neither anticipated nor made obvious by these references. The applicant would like to point out the following distinctions.

The features of the present invention involving manufacturing of the optical fiber grating are as follows:

1) hydrogen loading before forming the optical fiber grating,

2) forming processing of the grating part in the material optical fiber by irradiation with ultraviolet light near 240 nm using an excimer laser,

3) dehydrogenation processing after the grating part has been formed,

4) optical property adjusting processing for adjusting the optical properties of the grating part by alternately performing uniform ultraviolet irradiation and uniform heat trimming processing at an optional number of times until the desired optical properties such as the center wavelength and the rejection rate are obtained,

5) final annealing processing by uniform heating of the grating part for stabilizing the optical properties of the grating part, and

6) the optical property adjusting processing by alternately performing the uniform ultraviolet light and the uniform heat trimming processing for the grating part by monitoring the transmitted light or the reflected light, in addition to the reference light of the optical fiber.

Shima et al. (U.S. Patent No. 5,949,934) discloses forming a grating part in an optical fiber, which consists of a core made of a silica glass with an impurity dopant and a cladding made of silica glass. However, Shima et al. does not disclose or teach the hydrogen loading processing, the optical property adjusting processing by combining the uniform ultraviolet irradiation and the uniform heat trimming at optional times for adjusting the optical properties (the center wavelength, the rejection rate and the rejection

wavelength bandwidth), or the final annealing processing for stabilizing the optical properties of the grating part.

Tsuda et al. (U.S. Patent No. 6,289,154B1) discloses a grating-type optical component having high isolation ability at a light-blocking band and a small cladding layer mode combination loss at a signal transmission band and its manufacturing method. The manufacturing method includes a first grating part formation step by irradiating with ultraviolet beams on a selected area on a core of the optical fiber through a phase mask for providing high refractive index area arid low refractive index area long the longitudinal axis of the optical fiber, and a second grating part formation step by again uniformly irradiating the selected area after removing the phase mask for producing the stable grating part. However, Tsuda et al. fails to teach the features of the present invention concerning hydrogen loading processing before formation of the grating part and dehydrogen processing after formation of the grating part. In particular, Tsuda et al. is silent about the optical property adjusting processing by alternately performing the uniform ultraviolet irradiation and the uniform heat trimming at optional times for adjusting the optical properties of the grating part, and the optical property adjusting processing that is carried out by monitoring the transmitted light or the reflected light, in addition to the reference light of the optical fiber.

Nishiki et al. (US Patent No. 6,456,762 B1) discloses a method of fabricating an optical waveguide device having a first step of forming a Bragg grating by applying

ultraviolet light to an optical waveguide to generate photo-induced refractive index changes and, a subsequent step of adjusting characteristics of the Bragg grating by irradiating ultraviolet light for trimming to the optical waveguide. However, Nishiki et al. fails to teach the features of the present invention concerning the hydrogen loading processing before formation of the grating part and the dehydrogenation processing after the grating part is formed. Furthermore, Nishiki et al. is silent about the optical property adjusting processing after formation of the grating part by combining the uniform ultraviolet irradiation and the uniform heat trimming at optional times for adjusting the optical properties of the grating part, and the optical property adjusting processing that is carried out by monitoring the transmitted light or the reflected light, in addition to the reference light of the optical fiber.

Starodubov et al. (US Patent No. 6,222,973 B1) discloses a refractive-index grating fabricated in an optical fiber having a multilayer coating and a method for making refractive index patterns such as gratings in optical fibers while preserving the mechanical properties of the original fibers. The refractive index patterns are written into the optical fiber by partially stripping away outer coating layers of the fiber, exposing the core of the fiber through the remainder of the coating with an actinic radiation to form the pattern in the photosensitive core, and the stripped area corresponding to the grating part is recoated for preserving the mechanical strength of the grating part. Starodubov et al. discloses to form the grating part by irradiation of an actinic radiation after removing

outside layers including an outside polymer layer 23 and a protective outside layer 24 when the grating part is formed in the multilayer optical fiber consisting of a core region 21, a cladding region 22, the outside polymer layer 23 and a protective outside layer 24. However, Starodubov et al. fails to teach the features of the present invention concerning forming process steps of the present grating optical fiber, such as the hydrogen loading processing before formation of the grating part and the dehydrogenation processing after the grating part is formed. Furthermore, Starodubov et al. is silent about the optical property adjusting processing after formation of the grating part by combining the uniform ultraviolet irradiation and the uniform heat trimming at optional times for adjusting the optical properties of the grating part, and the optical property adjusting processing that is carried out by monitoring the transmitted light or the reflected light, in addition to the reference light of the optical fiber.

In view of the foregoing, the applicant submits that the present invention, as recited in the amended claims, is neither anticipated nor rendered obvious by the cited prior art references. Entry of this amendment and an early favorable action on the merits are respectfully requested.

CERTIFICATE OF MAILING
I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail under 37 C.F.R. 1.8 in an envelope addressed to:
Commissioner for Patents, United States Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450
DATE: April 5, 2004

NAME: Daniel Basov

SIGNATURE: D. Basov

Respectfully submitted,

By Daniel Basov

Daniel Basov, Esq.
Reg. # 42,303
Chadbourne & Parke LLP
30 Rockefeller Plaza
New York, New York 10112
(212) 408-5275

Attorneys for Applicant

April 5, 2004